

IEEE Life Members Affinity Group Germany

Meeting minutes

The LMAG Germany technical meeting took place on Tuesday, 05 May 2026 as a virtual meeting. It was conducted by Michael Wahl as the chair and Max Riegel as secretary.

Attendance roster: Michael Wahl (Chair), Clemens Ruppel (Treasurer), Max Riegel (Secretary), Achim Dreher, Christel Zirwas-Hoffmann, Christian Schaeffer, Erik Jacobson, Erik Maehle, Ernst Gockenbach, Gerd Ascheid, Heiner Ryssel, Klaus Petermann, Rainer Makowith, Ralph Kennel, Reiner Thomä, Sonntag, Uwe Haass, Victor Manske, Wolf Nagl, Wolf von Maltzahn, Werner Mohr, Werner Wolf, Wolfgang Stehwien.

Guest: Prof. Michael Möller (Uni Siegen)

1 Call to order

The chair called the meeting to order on 05 May 2026 at 17:15 CET.

2 Agenda

The chair presented the proposed agenda.

- Call to order
- Minutes of the last meeting
- Technical presentation
- Questions, answers, and discussions
- Next meeting
- AOB

Agenda accepted without comments.

3 Minutes of the last meeting

The chair presented the minutes of the last technical meeting on March 3rd. No comments received.

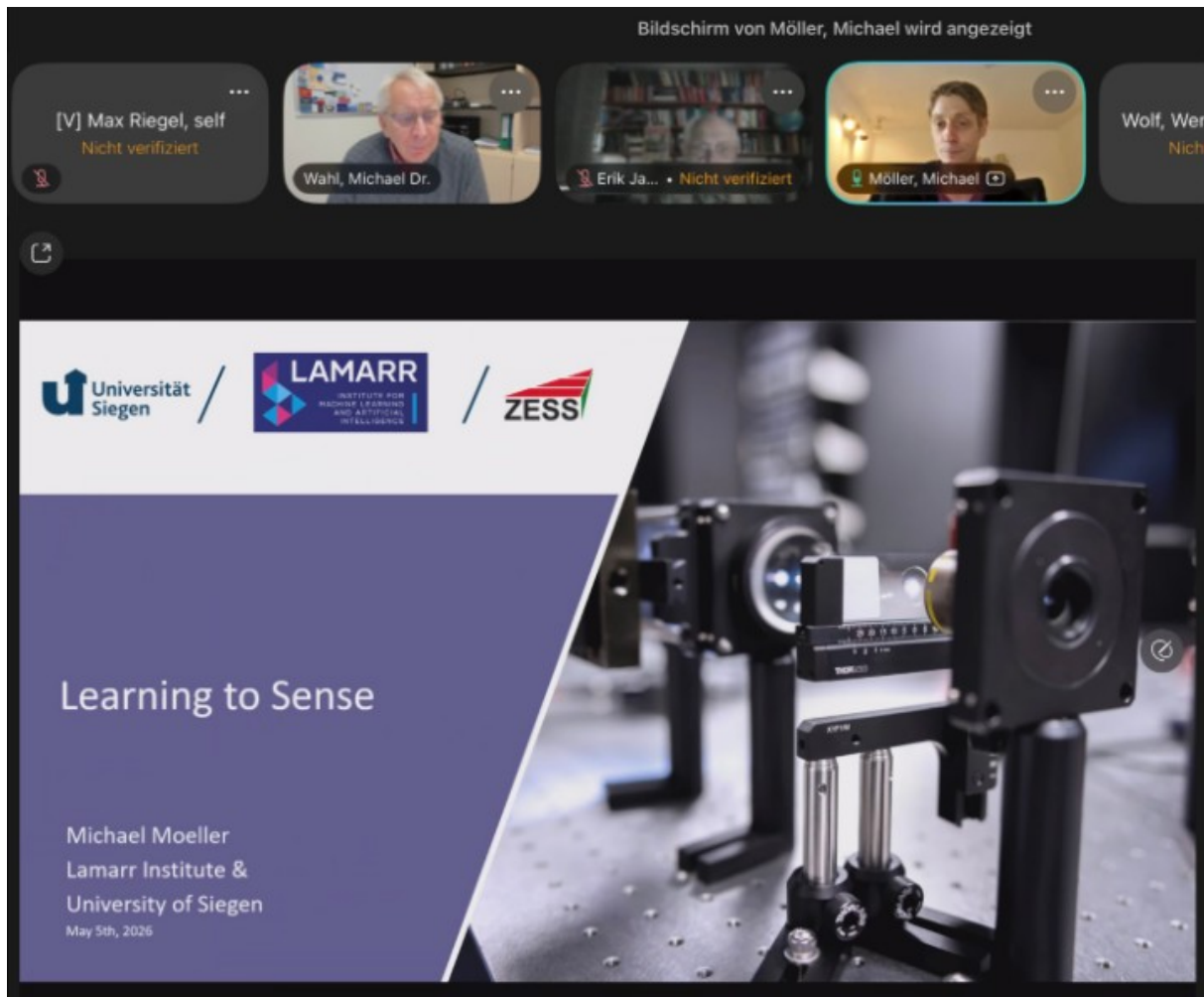
4 Technical presentation

The chair welcomed the presenter of today's meeting, Prof. Michael Möller, Uni Siegen providing a presentation on "Learning to Sense - Joint Optimization of Imaging System and Machine Learning Parameters".

Traditional imaging systems are designed to maximize the visual quality of the recorded images for human inspection on a screen. Yet nowadays, an increasing number of imaging systems provide data for automatic analysis with machine learning approaches only. This gives rise to the idea of optimizing sensor system parameters jointly with neural network parameters in such a way that the recorded data is optimal for subsequent machine learning-based analysis. The presentation illustrated this idea in several applications, including optimizing for non-uniform pixel layouts on a sensor and highly efficient video data recording via learned quantization.

After highlighting the challenges of computer vision through an example showing the difficulties to distinguish pictures of muffin cakes and dog faces, Prof. Michael Möller provided an introduction into the principles of machine learning and explained his research results of extending machine learning to sensor system designs. E.g. an optimized sensor

layout for street scenes would deploy a non-uniform grid with higher density at right and left borders as well as horizontally in the middle. Such adjusted sensor designs raised fundamental research questions regarding the representation of images for computer vision. Instead of a regular grid of sample values, neural representations with a reduced set of parameters provide better input for scene decomposition and segmentation. Sensor systems for neural processing further benefit from non-linear quantization and temporally varying quantization.



5 Questions, answers, and discussions

Discussions addressed former research on linear sensor systems, the difficulties to fully understand sampling issues, and how to represent multidimensional data through finite elements.

The presenter explained that instead of compressing the amount of data to make it manageable, nowadays the energy consumption of signal processing is more important. The research focused more on optimization issues of picture sensors, but finally applications may benefit from multimodal sensor systems that combine not only visual impressions but also other criterias.

It was also observed by participants that the presented research seems to lead back from data based AI to more rule based AI, probably leading to much more research work on further AI models amending the frequently used LLMs.

6 AOB

None

7 Next meeting

The next LMAG Germany technical meeting will take place on Tuesday, 07 July 2026 at 17:15 CET with a presentation of Prof. Robert Weigel (IEEE LF) on “Burg Feuerstein und Schloss Pretzfeld: High Tech in der Fränkischen Schweiz im und nach dem Zweiten Weltkrieg”.

8 Adjourn

The meeting was adjourned by the chair at 18:20 CET.

Participation:

